

AMENDMENTS TO THE CLAIMS:

1. **(Currently Amended)** A surface plasmon resonance sensor chip comprising:
a metal layer (3) along whose surface a surface plasmon wave can be induced by light irradiation; and

a plurality of diffraction grating surfaces (5a-5i, 251-254) that are disposed in the vicinity of said metal layer (3),

wherein and on each of which each of said diffraction grating surfaces has a diffraction grating with a uniform groove orientation and a uniform groove pitch is formed so as to generate an evanescent wave upon light irradiation;

wherein said diffraction grating surfaces are perpendicular to a specific plane, which is perpendicular to a predetermined reference plane, and form different inclination angles ($\alpha a-\alpha i$) with the reference plane, and

the groove orientation of the diffraction grating on each said diffraction grating surface is perpendicular to the specific plane the groove pitch (d1-d4) and the groove orientation of each said diffraction grating surface (5a-5i, 251-254), in addition to the angle ($\alpha a-\alpha i$) that each said diffraction grating surface (5a-5i, 251-254) forms with a predetermined reference plane (S0), are adjusted in such a manner that when said diffraction grating surfaces (5a-5i, 251-254) are projected onto a predetermined projection plane, the groove orientations in the projection plane are identical while the groove pitches in the projection plane are different among said diffraction grating surfaces (5a-5i, 251-254).

2. (Cancelled)

3. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 2 1, wherein said plural diffraction grating surfaces (5a-5i) are disposed along a line parallel to the specific plane (S1) ~~in such a manner~~ that when viewed from a direction parallel to the specific plane (S1), said plural diffraction grating surfaces (5a-5i) are positioned in decreasing order of the inclination angle ($\alpha a-\alpha i$) that each said diffraction grating surface (5a-5i) forms with the reference plane (S0).

4. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 2 1, wherein said diffraction grating surfaces (~~5a-5i~~) are disposed continuously so as to form a convex shape, whose light-irradiated side bulges out.

5. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 4, wherein each said diffraction grating surface (~~25~~) has a minimum width with one groove alone, and the an aggregate of said diffraction grating surfaces (~~25~~) forms a curved surface in an arc shape, whose light-irradiated side bulges out.

6. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 2 1, wherein

each said diffraction grating surface (~~5a-5i~~) is formed along a sensor surface (~~1a~~), which comes in contact with a sample, and

on the sensor surface (~~1a~~), a binding substance (~~7~~) that binds specifically to a target species in the sample is immobilized for each said diffraction grating surface (~~5a-5i~~).

7. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 6, wherein two or more kinds of binding substances (~~7~~) are immobilized for each said diffraction grating surface (~~5a-5i~~).

8. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 2 1, further comprising a plurality of diffraction areas (~~6~~), within each of which said diffraction grating surfaces (~~5a-5i~~) are concentratedly disposed, wherein said plural diffraction grating surfaces (~~5a-5i~~) in each of said diffraction areas (~~6~~) have different inclination angles.

9. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 8, wherein

each said diffraction grating surface (~~5a-5i~~) is disposed along a sensor surface (~~1a~~), which comes in contact with a sample, and

on the sensor surface (~~1a~~), two or more binding substances (~~7~~) which each bind specifically to target species in the sample are immobilized so as to be associated with said diffraction areas (~~6~~).

10. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 6, further comprising a plurality of non-diffraction surfaces ~~(37a-37i)~~, which do not have any diffraction grating,

wherein each of said non-diffraction surfaces ~~(37a-37i)~~ is disposed along the sensor surface in the same plane with the respective one of said diffraction grating surfaces ~~(35a-35i)~~.

11. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 6, wherein each said diffraction grating surface has a reaction area, within which the binding substance ~~(47)~~ is immobilized, and a non-reaction area, within which a substance ~~(48)~~ that does not bind specifically to any target species in the sample is immobilized or, alternatively, any substance is not immobilized.

12. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 6, wherein

said diffraction grating surfaces are arranged in a direction, perpendicular to the groove orientation, and

said sensor chip further comprises

a cover ~~(72)~~ for covering the sensor surface ~~(1a)~~, and

a plurality of flow channels ~~(70)~~ formed side by side between the sensor surface ~~(1a)~~ and said cover ~~(72)~~ so as to pass along the direction in which said diffraction grating surfaces are arranged.

13. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 8, further comprising a plurality of non-diffraction areas ~~(88)~~ associated one with each said diffraction area ~~(87)~~, each of said non-diffraction areas ~~(88)~~ having a plurality of non-diffraction surfaces concentratedly disposed therein, each of which non-diffraction surfaces does not have any diffraction grating,

wherein the inclination angles that said non-diffraction surfaces included in the non-diffraction area ~~(88)~~ form with the reference plane have the same distribution as the distribution of the inclination angles that said diffraction grating surfaces included in the associated diffraction areas ~~(87)~~ form with the reference plane.

14. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 8, wherein

each of one or more diffraction areas among said diffraction areas (96) has a reaction area, in which a binding substance (97) that binds specifically to a target species in the sample is immobilized, and

each of the remaining diffraction areas among said diffraction areas (96) has a non-reaction area, in which a substance (98) that does not bind specifically to any target species in the sample is immobilized or, alternatively, any substance is not immobilized.

15. **(Currently Amended)** A surface plasmon resonance sensor chip as defined in claim 8, further comprising

a cover (102) for covering the sensor surface (1a), and

a plurality of flow channels (100) disposed side by side between the sensor surface (1a) and said cover (102),

wherein said diffraction areas (6) are disposed for each of said flow channels (100).

16.-101. **(Cancelled)**